

Number of Channels to be assigned

The number of channels to be assigned to each eligible, whether a known entity or a pool for future assignment, will be determined by other procedures in the Regional Plan. Therefore, it merely becomes a piece of input data in the assignment program.

Who is to receive channel assignments?

The eligibles who are to receive channels is a list determined by other procedures in the Regional Plan. Therefore, the list is just a list to be used as input to identify the eligibles.

What the Program Does

1. Input data for the Region (single site systems first)
 - Name (entity-county)
 - Co-ordinates
 - Range
 - Environment
 - Blocked/Protected Channels
 - Even/odd channel requirements
2. Select parameters
 - Combiner spacing
 - Maximum spectrum to be used
 - Number of iterations allowed
 - Protection Ratios for co-channel and adjacent channels
3. Computer determines an ERP/Ant. Height combination which places the 40dbu point at the range specified, in the environment specified for each system.
4. Computer calculates distances between all possible combinations of single site and multiple site systems.
5. The computer uses its input tables to determine compatible assignments such that the signal strength at a co-channel assignees boundary is $< + 5$ dbu, and the signal strength at an adjacent channel assignees boundary is $< + 25$ dbu.

6. If the maximum spectrum allowed is filled before all systems are assigned channels, then the list is re-ordered according to the difficulty of assignments, and another iteration is made.
7. If the maximum number of iterations is reached before all assignments are satisfied, the maximum spectrum allowed is increased and the process begins again. The maximum spectrum allowed is initially set at a value which will fail to find a solution. By incrementing its value on successive attempts, the first successful run should be the most spectrum efficient case this program will ever find.
8. In the event that the spectrum needed exceeds the FCC allocations, to get a solution the following adjustments can be made.
 - Number of assignments must be reduced
 - System ranges must be reduced
 - Protection ratios must be reduced
 - Number of iterations must be increased
 - Combinations of the above

Output Reports

- 1) Input Data For Assignment Program
 - Data Input from Region.
 - Adds ERP and Antenna Height determined by the computer
 - needs to be checked for accuracy
- 2) FCC Channel Assignments
 - Assignments ordered by channel number
 - This list will eventually go to the FCC
- 3) Sites and Assigned Channels
 - Ordered by Site (User)
 - FCC channels within site in numerical order
 - useful for checking combining assignments
 - useful for checking even/odd assignments
- 4) Detailed Assignment lists
 - a very useful tool for trouble shooting the computer output

Format for Transmitting Information to Computer

A standardized format for transmitting the necessary information to the computer program would look like this:

A list of pre-assigned region wide channels and channels reserved for protection must also be supplied.

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of

Amendment of Subpart S of
Part 90 of the Rules to
Permit Licensing of Channels
in the 821-824/866-869 MHz Bands in
the U.S.-Mexico Border Area

ORDER

Adopted: July 31, 1991;

Released: August 9, 1991

By the Chief, Private Radio Bureau:

1. On July 24, 1986, the Commission allocated six megahertz of spectrum in the 821-824 MHz and 866-869 MHz bands for use exclusively in the Public Safety and Special Emergency Radio Services.¹ The Commission delineated service rules for these six megahertz of spectrum in a subsequent *Report and Order*.² That *Report and Order*, however, did not provide for use of the 821-824/866-869 MHz bands within 110 km (68.4 miles) of the Mexican border, pending agreement with Mexico.

2. On July 2, 1991, the Federal Communications Commission of the United States of America and the Direccion General De Politicas Y Normas De Comunicaciones of the United Mexican States signed a Memorandum of Understanding (MOU) that governs use of the 821-824/866-869 MHz bands within 110 km (68.4 miles) of the U.S.-Mexican border. The MOU specifies the channels that will be available for licensing by each administration within the border area. This *Order* modifies Subpart S of Part 90, 47 C.F.R. Part 90, to conform the Rules to the MOU and to permit licensing of radio systems in the Mexican border area.

3. The 821-824/866-869 MHz Public Safety channels are available for licensing in the Mexican border zone on publication of this *Order* in the Federal Register. Such licensing must conform with Regional Public Safety Plans that have been accepted by the Commission.

4. These rule changes will facilitate the construction of additional Private Land Mobile Radio stations in the Mexican border area. This should result in improved mobile communication service to the public safety community without adversely affecting any party. As this *Order* does not impose new rules on licensees that would adversely affect their substantive rights, we find that notice and comment procedures are neither necessary nor appropriate.³ To initiate a notice and comment procedure to make these additional channels available for licensing

in the Mexican border area would significantly delay the use of these channels without any countervailing public interest benefit. Further, because the rule changes relieve a restriction, we also conclude that these changes should become effective immediately upon publication in the Federal Register.⁴

5. Therefore, effective upon publication in the Federal Register, Part 90 of the Commission's Rules is amended as indicated in the Appendix below. This is based on authority contained in Sections 4(i) and 303 of the Communications Act, as amended, 47 U.S.C. §§ 154(i) and 303, Section 0.331(a)(1) of the Commission's Rules, 47 C.F.R. § 0.331(a)(1), and 5 U.S.C. §§ 553(b)(3)(B) and (d)(1).

FEDERAL COMMUNICATIONS COMMISSION

Ralph A. Haller
Chief, Private Radio Bureau

APPENDIX

Part 90 of Chapter 1 of Title 47 of the Code of Federal Regulations is amended as follows:

PART 90 - PRIVATE LAND MOBILE RADIO SERVICES

1. The authority citation for Part 90 continues to read as follows:

Authority: Sections 4, 303, 331, 48 Stat., as amended, 1066, 1082; 47 U.S.C. 154, 303, and 332, unless otherwise noted.

2. Section 90.601 is revised to read as follows:

Subpart S - Regulations Governing Licensing and Use of Frequencies in the 806-824, 851-869, 896-901, and 935-940 MHz Bands

§ 90.601 Scope.

This subpart sets out the regulations governing the licensing and operations of all systems operating in the 806-824/851-869 MHz and 896-901/935-940 MHz bands. It includes eligibility requirements, application procedures, operational, and technical standards for stations licensed in these bands. The rules in this subpart are to be read in conjunction with the applicable requirements contained elsewhere in this part; however, in case of conflict, the provisions of this subpart shall govern with respect to licensing and operation in these frequency bands.

¹ Report and Order, Gen. Docket Nos. 84-1231, 84-1233, and 84-1234, 61 RR2d 165 (1986).

² In the Matter of Development and Implementation of a Public Safety National Plan and Amendment of Part 90 to Establish Service Rules and Technical Standards for Use of the

821-824/866-869 MHz Bands by the Public Safety Services, Report and Order, Gen. Docket No. 87-112, 3 FCC Rcd 905 (1988).

³ See 5 U.S.C. § 553(b)(3)(B).

⁴ See 5 U.S.C. § 553(d)(1).

3. Section 90.619 is amended by revising paragraphs (a), and (a)(1), redesignating paragraphs (a)(2), (a)(3) and (a)(4) as paragraphs (a)(3), (a)(4) and (a)(5), respectively, adding new paragraph (a)(2), revising the title and caption for Table 1, and adding new Tables 1B, and 1C, to read as follows:

§ 90.619 Frequencies available for use in the U.S./Mexico and U.S./Canada border areas.

(a) U.S./Mexico border area. The channels listed in Tables 1A, 2, 3, and 4 are offset 12.5 kHz lower in frequency than those specified in § 90.613. The Channel 201 mobile frequency will be 811.000 MHz, followed by Channel 202 at 811.025 MHz and proceeding with uniform 25 kHz channeling to Channel 400 at 815.975 MHz. Base station frequencies will be 45 MHz higher in frequency. These channels are available for assignment for conventional or trunked systems only in areas 110 kilometers (68.4 miles) or less from the U.S./Mexico border. Stations located on Mt. Lemmon, serving the Tucson, AZ area, shall only be authorized offset frequencies.

(1) Table 1A lists the channels in the 806-821.851-866 MHz band that are available for assignment to eligible applicants in the Public Safety Category (consisting of the Local Government, Police, Fire, Highway Maintenance, Forestry-Conservation, and Special Emergency Radio Services). Specialized Mobile Radio Systems (SMRS) will not be authorized in this category. These channels are available for intercategory sharing as indicated in § 90.621(g).

Table 1A - United States/Mexico Border Area, Public Safety Category 806-821.851-866 MHz Band (85 Channels):

* * * * *

(2) Certain channels in the 821-824.866-869 MHz band are also available to eligible applicants in the Public Safety Category in areas within 110 kilometers (68.4 miles) of the U.S./Mexican border. These channels will be assigned according to the policies defined in the Report and Order of Gen. Docket No. 87-112 (See §§ 90.16 and 90.34). The following channels are available only for mutual aid purposes as defined in Gen. Docket No. 87-112: channels 601, 639, 677, 715, and 753. The specific channels that are available for licensing in this band within 110 kilometers (68.4 miles) of the Mexican border are listed in Table 1B, and are subject to Effective Radiated Power (ERP) and Antenna Height limitations as indicated in Table 1C. In addition, all channels designated for use within Mexico in this band are available for assignment within 110 kilometers (68.4 miles) of the Mexican border if the maximum power flux density (PFD) of the station's transmitted signal at any point at or beyond the border does not exceed -107 dBW/m^2 . The spreading loss shall be calculated using the free space formula taking into account any antenna discrimination in the direction of the border. Authorizations for stations using channels allotted primarily to Mexico will be secondary to Mexican operations and conditioned to require that licensees take immediate action to eliminate any harmful interference resulting from the station's transmitted signal exceeding -107 dBW/m^2 .

Table 1B - United States/Mexico Border Area, Public Safety Category
821-824/866-869 MHz Band (107 Channels):

Channel	Base Frequency	Mobile Frequency	Country
601	866.0125	821.0125	Both Countries
***	866.0250	821.0250	Not Available
602	866.0375	821.0375	U.S.
603	866.0500	821.0500	U.S.
604	866.0625	821.0625	U.S.
605	866.0750	821.0750	U.S.
606	866.0875	821.0875	U.S.
607	866.1000	821.1000	U.S.
608	866.1125	821.1125	U.S.
609	866.1250	821.1250	U.S.
610	866.1375	821.1375	U.S.
611	866.1500	821.1500	Guard Channel
612	866.1625	821.1625	MEXICO
613	866.1750	821.1750	MEXICO
614	866.1875	821.1875	MEXICO
615	866.2000	821.2000	MEXICO
616	866.2125	821.2125	MEXICO
617	866.2250	821.2250	MEXICO
618	866.2375	821.2375	MEXICO
619	866.2500	821.2500	MEXICO
620	866.2625	821.2625	MEXICO
621	866.2750	821.2750	MEXICO
622	866.2875	821.2875	MEXICO
623	866.3000	821.3000	MEXICO
624	866.3125	821.3125	MEXICO
625	866.3250	821.3250	MEXICO
626	866.3375	821.3375	MEXICO
627	866.3500	821.3500	MEXICO
628	866.3625	821.3625	MEXICO
629	866.3750	821.3750	Guard Channel
630	866.3875	821.3875	U.S.
631	866.4000	821.4000	U.S.
632	866.4125	821.4125	U.S.
633	866.4250	821.4250	U.S.
634	866.4375	821.4375	U.S.
635	866.4500	821.4500	U.S.
636	866.4625	821.4625	U.S.
637	866.4750	821.4750	U.S.
638	866.4875	821.4875	U.S.
***	866.5000	821.5000	Not Available
639	866.5125	821.5125	Both Countries
***	866.5250	821.5250	Not Available
640	866.5375	821.5375	U.S.
641	866.5500	821.5500	U.S.
642	866.5625	821.5625	U.S.
643	866.5750	821.5750	U.S.

Channel	Base Frequency	Mobile Frequency	Country
644	866.5875	821.5875	U.S.
645	866.6000	821.6000	U.S.
646	866.6125	821.6125	U.S.
647	866.6250	821.6250	U.S.
648	866.6375	821.6375	U.S.
649	866.6500	821.6500	Guard Channel
650	866.6625	821.6625	MEXICO
651	866.6750	821.6750	MEXICO
652	866.6875	821.6875	MEXICO
653	866.7000	821.7000	MEXICO
654	866.7125	821.7125	MEXICO
655	866.7250	821.7250	MEXICO
656	866.7375	821.7375	MEXICO
657	866.7500	821.7500	MEXICO
658	866.7625	821.7625	MEXICO
659	866.7750	821.7750	MEXICO
660	866.7875	821.7875	MEXICO
661	866.8000	821.8000	MEXICO
662	866.8125	821.8125	MEXICO
663	866.8250	821.8250	MEXICO
664	866.8375	821.8375	MEXICO
665	866.8500	821.8500	MEXICO
666	866.8625	821.8625	MEXICO
667	866.8750	821.8750	Guard Channel
668	866.8875	821.8875	U.S.
669	866.9000	821.9000	U.S.
670	866.9125	821.9125	U.S.
671	866.9250	821.9250	U.S.
672	866.9375	821.9375	U.S.
673	866.9500	821.9500	U.S.
674	866.9625	821.9625	U.S.
675	866.9750	821.9750	U.S.
676	866.9875	821.9875	U.S.
***	867.0000	822.0000	Not Available
677	867.0125	822.0125	Both Countries
***	867.0250	822.0250	Not Available
678	867.0375	822.0375	U.S.
679	867.0500	822.0500	U.S.
680	867.0625	822.0625	U.S.
681	867.0750	822.0750	U.S.
682	867.0875	822.0875	U.S.
683	867.1000	822.1000	U.S.
684	867.1125	822.1125	U.S.
685	867.1250	822.1250	U.S.
686	867.1375	822.1375	U.S.
687	867.1500	822.1500	Guard Channel
688	867.1625	822.1625	MEXICO
689	867.1750	822.1750	MEXICO
690	867.1875	822.1875	MEXICO
691	867.2000	822.2000	MEXICO
692	867.2125	822.2125	MEXICO

Channel	Base Frequency	Mobile Frequency	Country
693	867.2250	822.2250	MEXICO
694	867.2375	822.2375	MEXICO
695	867.2500	822.2500	MEXICO
696	867.2625	822.2625	MEXICO
697	867.2750	822.2750	MEXICO
698	867.2875	822.2875	MEXICO
699	867.3000	822.3000	MEXICO
700	867.3125	822.3125	MEXICO
701	867.3250	822.3250	MEXICO
702	867.3375	822.3375	MEXICO
703	867.3500	822.3500	MEXICO
704	867.3625	822.3625	MEXICO
705	867.3750	822.3750	Guard Channel
706	867.3875	822.3875	U.S.
707	867.4000	822.4000	U.S.
708	867.4125	822.4125	U.S.
709	867.4250	822.4250	U.S.
710	867.4375	822.4375	U.S.
711	867.4500	822.4500	U.S.
712	867.4625	822.4625	U.S.
713	867.4750	822.4750	U.S.
714	867.4875	822.4875	U.S.
***	867.5000	822.5000	Not Available
715	867.5125	822.5125	Both Countries
***	867.5250	822.5250	Not Available
716	867.5375	822.5375	U.S.
717	867.5500	822.5500	U.S.
718	867.5625	822.5625	U.S.
719	867.5750	822.5750	U.S.
720	867.5875	822.5875	U.S.
721	867.6000	822.6000	U.S.
722	867.6125	822.6125	U.S.
723	867.6250	822.6250	U.S.
724	867.6375	822.6375	U.S.
725	867.6500	822.6500	Guard Channel
726	867.6625	822.6625	MEXICO
727	867.6750	822.6750	MEXICO
728	867.6875	822.6875	MEXICO
729	867.7000	822.7000	MEXICO
730	867.7125	822.7125	MEXICO
731	867.7250	822.7250	MEXICO
732	867.7375	822.7375	MEXICO
733	867.7500	822.7500	MEXICO
734	867.7625	822.7625	MEXICO
735	867.7750	822.7750	MEXICO
736	867.7875	822.7875	MEXICO
737	867.8000	822.8000	MEXICO
738	867.8125	822.8125	MEXICO
739	867.8250	822.8250	MEXICO
740	867.8375	822.8375	MEXICO
741	867.8500	822.8500	MEXICO

Channel	Base Frequency	Mobile Frequency	Country
742	867.8625	822.8625	Guard Channel
743	867.8750	822.8750	U.S.
744	867.8875	822.8875	U.S.
745	867.9000	822.9000	U.S.
746	867.9125	822.9125	U.S.
747	867.9250	822.9250	U.S.
748	867.9375	822.9375	U.S.
749	867.9500	822.9500	U.S.
750	867.9625	822.9625	U.S.
751	867.9750	822.9750	U.S.
752	867.9875	822.9875	U.S.
***	868.0000	823.0000	Not Available
753	868.0125	823.0125	Both Countries
***	868.0250	823.0250	Not Available
754	868.0375	823.0375	U.S.
755	868.0500	823.0500	U.S.
756	868.0625	823.0625	U.S.
757	868.0750	823.0750	U.S.
758	868.0875	823.0875	U.S.
759	868.1000	823.1000	U.S.
760	868.1125	823.1125	U.S.
761	868.1250	823.1250	U.S.
762	868.1375	823.1375	U.S.
763	868.1500	823.1500	Guard Channel
764	868.1625	823.1625	MEXICO
765	868.1750	823.1750	MEXICO
766	868.1875	823.1875	MEXICO
767	868.2000	823.2000	MEXICO
768	868.2125	823.2125	MEXICO
769	868.2250	823.2250	MEXICO
770	868.2375	823.2375	MEXICO
771	868.2500	823.2500	MEXICO
772	868.2625	823.2625	MEXICO
773	868.2750	823.2750	MEXICO
774	868.2875	823.2875	MEXICO
775	868.3000	823.3000	MEXICO
776	868.3125	823.3125	MEXICO
777	868.3250	823.3250	MEXICO
778	868.3375	823.3375	MEXICO
779	868.3500	823.3500	MEXICO
780	868.3625	823.3625	Guard Channel
781	868.3750	823.3750	U.S.
782	868.3875	823.3875	U.S.
783	868.4000	823.4000	U.S.
784	868.4125	823.4125	U.S.
785	868.4250	823.4250	U.S.
786	868.4375	823.4375	U.S.
787	868.4500	823.4500	U.S.
788	868.4625	823.4625	U.S.
789	868.4750	823.4750	U.S.
790	868.4875	823.4875	U.S.

Channel	Base Frequency	Mobile Frequency	Country
791	868.5000	823.5000	U.S.
792	868.5125	823.5125	U.S.
793	868.5250	823.5250	U.S.
794	868.5375	823.5375	U.S.
795	868.5500	823.5500	U.S.
796	868.5625	823.5625	U.S.
797	868.5750	823.5750	U.S.
798	868.5875	823.5875	U.S.
799	868.6000	823.6000	U.S.
800	868.6125	823.6125	Guard Channel
801	868.6250	823.6250	MEXICO
802	868.6375	823.6375	MEXICO
803	868.6500	823.6500	MEXICO
804	868.6625	823.6625	MEXICO
805	868.6750	823.6750	MEXICO
806	868.6875	823.6875	MEXICO
807	868.7000	823.7000	MEXICO
808	868.7125	823.7125	MEXICO
809	868.7250	823.7250	MEXICO
810	868.7375	823.7375	MEXICO
811	868.7500	823.7500	MEXICO
812	868.7625	823.7625	MEXICO
813	868.7750	823.7750	MEXICO
814	868.7875	823.7875	MEXICO
815	868.8000	823.8000	MEXICO
816	868.8125	823.8125	MEXICO
817	868.8250	823.8250	MEXICO
818	868.8375	823.8375	MEXICO
819	868.8500	823.8500	MEXICO
820	868.8625	823.8625	MEXICO
821	868.8750	823.8750	MEXICO
822	868.8875	823.8875	MEXICO
823	868.9000	823.9000	MEXICO
824	868.9125	823.9125	Guard Channel
825	868.9250	823.9250	U.S.
826	868.9375	823.9375	U.S.
827	868.9500	823.9500	U.S.
828	868.9625	823.9625	U.S.
829	868.9750	823.9750	U.S.
830	868.9875	823.9875	U.S.

Table 1C - Limits of Effective Radiated Power (ERP) Corresponding to Antenna Heights of Base Stations in the 821-824/866-869 MHz Band within 110 kilometers (68.4 miles) of the Mexican Border

Antenna Height Above Mean Sea Level		ERP
Meters	Feet	Watts (maximum)
0 - 503	0 - 1650	500
504 - 609	1651 - 2000	350
610 - 762	2001 - 2500	200
763 - 914	2501 - 3000	140
915 - 1066	3001 - 3500	100
1067 - 1219	3501 - 4000	75
1220 - 1371	4001 - 4500	70
1372 - 1523	4501 - 5000	65
Above 1523	Above 5000	5

★ ★ ★ ★ ★

ANNEX B

SHARING PRINCIPLES

This annex describes the sharing principles for the use of the five public safety mutual aid channel pairs on both sides of the common border.

1. The following channels will be used as public safety mutual aid channels:

<u>Mobile</u>	<u>Base</u>
821.0125 MHz calling	866.0125 MHz calling
821.5125 MHz	866.5125 MHz
822.0125 MHz	867.0125 MHz
822.5125 MHz	867.5125 MHz
823.0125 MHz	868.0125 MHz

2. All equipment capable of operating on the mutual aid channels must be equipped with the tone squelch of 156.7 Hz.
3. The channels shall be 25 kHz wide.
4. Within 110 kilometers of the common border, neither Party shall assign frequencies closer than 25 kHz to any of the mutual aid channels.
5. The mutual aid channels are available on a shared basis to duly authorized public safety agencies on both sides of the border. Users must first monitor the frequency before transmitting to ensure that any on-going emergency communications are not interrupted.

6. The mutual aid channels are to be used only for coordination of tactical communications between different public safety agencies, or for other similar emergency situations. They must not be used for administrative or other routine communications.

7. When the Parties designate regions along the border, they will designate and exchange local points of contact in the corresponding regions to facilitate the coordination of base stations established to provide mutual aid capabilities across the border.

8. Requests for aid across the border should first be made on the calling channel 821.0125/866.0125 MHz.

9. Regions that operate on these mutual aid channels shall designate agencies to monitor the calling channel on a 24 hour basis every day of the year.

10. The points of contact in adjoining regions across the border shall participate in the cooperative establishment of priorities in the case of multiple emergencies requiring use of the channels according to the following general priorities:

Priority A: Large scale disaster and emergency situations involving imminent danger to the safety of the public at large (e.g., earthquakes, large chemical spills).

Priority B: Other emergency situations involving imminent danger to the safety of life or property.

-3-

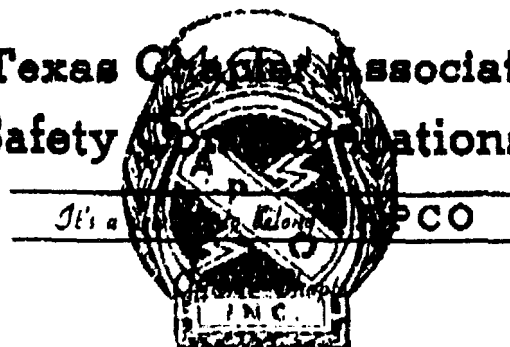
Priority C: Special event control activities, generally of a pre-planned nature, and requiring coordination of two or more agencies.

Priority D: Drill, test, and exercises of civil defense or disaster response procedures.

Whenever the use of a higher priority is required, all lower priority operations must cease in any area where interference to the use of a higher priority could occur.

SH-1

Texas Chapter Associated Public-Safety Communications Officers



Frequency Coordination Advisor
Kenneth C. Yoder
Box 4087-5806 N. Lamar Blvd.
Austin, TX 78773-0026
(512) 466-2104
(512) 466-2899 FAX

Alternate Advisor
Joe Blair
Dallas/Fort Worth Airport
P. O. Drawer DFW
Dallas/Fort Worth Airport, TX 75261
(214) 574-8642
(214) 574-3128 FAX

TO WHOM IT MAY CONCERN

Protected Channels for 821 MHz Region Plans

The following frequencies are listed as the National Calling Channels and are to be placed into each and every plan. There should be a frequency blocked on each side of these frequencies for protection:

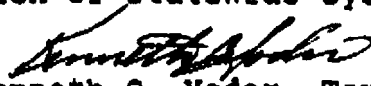
Channel	Frequency
601	866.0125
639	866.5125
677	867.0125
715	867.5125
753	868.0125

The following frequencies are requested for State-wide Channels for State Agencies:

Channel	Frequency	Channel	Frequency
602	866.0375	712 **	867.4625
604 *	866.0625	714	867.4875
636 **	866.4625	716	867.5375
638	866.4875	718 *	867.5625
640	866.5375	750 **	867.9625
642 *	866.5625	752	867.9875
674 **	866.9625	754	868.0375
676	866.9875	756 *	868.0625
678	867.0375	826	868.9375
680 *	867.0625	828 **	868.9625

NOTE: * - Texas DPS Primary 1 Net. W/Highways?
** - Texas DPS Primary 2 Net. W/Highways?

Request adj-channels be blocked to provide protection of Statewide systems.


Kenneth C. Yoder, Texas APCO
Frequency Advisor